JAMA Network Open

Invited Commentary | Infectious Diseases

How Can We Routinely Measure Appropriateness of Antimicrobial Use in Hospitals at a National Level?

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The study by Ierano et al[1] presents the results of a national audit assessing the appropriateness of surgical antimicrobial prophylaxis (SAP) in Australia. This well-designed and ambitious initiative provides data for action to guide antimicrobial stewardship (AMS) interventions.

International data consistently show that 12% to 19% of inpatient antimicrobial prescriptions are for SAP.[1] The Australian National Antimicrobial Prescribing Survey (NAPS) was developed to collect surgical procedure–specific data, including details of the procedures and timing of antimicrobials for benchmarking and targeted feedback of SAP prescribing. The NAPS audit was conducted annually from January 2016 to June 2018. Participation was voluntary and data could be collected prospectively or retrospectively. Hospitals could adopt a convenience sampling method to audit either a targeted surgical group or all surgical procedures conducted during a specific period. Trained auditors collected data according to a standardized method and data collection form. Auditors were primarily pharmacists, nurses, and infectious disease physicians who were provided with structured education and online training to ensure consistency of methodology. All data from registered sites were entered in the Surgical NAPS online portal. Ongoing support and advice from a central clinical support team was also available by telephone and email to guide auditors, specifically with appropriateness assessments. Appropriateness of SAP was a composite measure based on antibiotic choice, timing of administration, duration, and repeated dosing, and these criteria were detailed in a standardized Appropriateness Assessment Guide.[1]

Almost one-fourth (22.5%) of Australian hospitals participated in the study.[1] As expected, significant room for improvement was documented, mostly because of incorrect timing of SAP (but only two-thirds of surgical episodes included a documented incision time) and durations of treatment that were too long.[1]

Measurement of the appropriateness of antibiotic use is crucial in AMS. Data provide health care professionals and other stakeholders insight into the appropriateness of current antibiotic use, help them to periodically self-reflect on their use, and provide targets for improvement. In addition, data facilitate comparison across organizations. A wide range of quality indicators for the inpatient setting are available, especially for SAP.[2] Is this study by Ierano et al[1] the example to follow to routinely collect data on appropriateness of antibiotic use in hospitals at national level? Having a national registry in which hospitals can participate on a voluntary basis undoubtedly adds value, as it facilitates such benchmarking. This exists in Australia as the NAPS system, which also includes data for indications other than SAP, and a version of it is starting in the Netherlands.[3] It is important that each hospital can easily access its data in real time: timely, repeated feedback to prescribers, along with explicit targets and a personalized action plan, is the most effective way to provide feedback.[4,5]

However, the problem with audits is that the manual collection of data is time-consuming. There are 2 main ways to address this issue. The first strategy is to conduct audits more frequently and on a smaller scale, possibly embedding data collection into the process of routine ward rounds conducted in daily practice by the AMS team. This approach has been used in Scotland, for example.[6] Information technology tools, such as a mobile application, might facilitate data collection and help present the results to prescribers as run-sequence graphs with visual targets. The second strategy is to move toward automated data collection, focusing on a range of quality indicators. This could be

facilitated by the increased uptake of electronic medical records in hospitals. Automated antimicrobial audits have been reported in the literature, but they are limited by the quality of diagnostic coding, which is usually quite poor.[7,8]

Another potential strategy would involve using antibiotic consumption data (eg, volume of prescribing data by defined daily dose), which are rather easily available, without diagnostic codes and systematically adjusting these data so that they approximate appropriateness of antibiotic use. To indicate that an instance of antibiotic misuse may have occurred, volumes could be adjusted for ecological effects or targets could be set. Data collection could be automated, and situations in which antibiotic misuse has likely occurred might trigger an in-depth review of appropriateness of use, perhaps by using audits. This approach has been suggested for children[9] and is also used by the World Health Organization for the recently developed AWaRe index.[10]

Further studies are urgently needed for such alternative ways to easily get information on appropriateness of antibiotic use. Antimicrobial stewardship teams are often understaffed, and their time is better spent on improving rather than measuring appropriate antibiotic use.

ARTICLE INFORMATION

Published: November 8, 2019. doi:10.1001/jamanetworkopen.2019.15030

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Conflict of Interest Disclosures: None reported.

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